

# Light Transport Techniques for Tensor Field Visualization

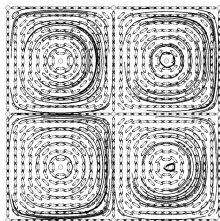
## Master's Thesis Presentation

Sebastian Bek

Heidelberg University  
Visual Computing Group (VCG)  
Supervisors: Prof. Filip Sadlo, Dr. Susanne Krömker

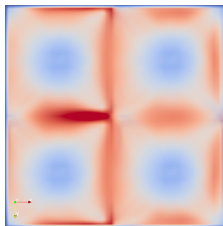
July 24th 2019

## Evaluation - Light Transport Gradient - Gyre Field

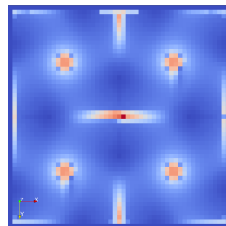


a) Glyphs

*Gyre test field*



b) LTG( $0^\circ$ )



c) T-FTLE: Hlawatsch's approach

- LTG is detecting ridges for diverging light distributions
- decreased response in gyre centers for circular overlap in difference image

## Related Work - Asymmetric Tensor Field Visualization

---

- dual eigenvectors<sup>1</sup>: use complex conjugate eigenvectors as co-visualization for the complex domain along with ordinary eigenvectors to represent the real domain
- pseudo eigenvectors<sup>2</sup>: extension for dual eigenvectors to a full set or graph
- scalar measures: tensor magnitude<sup>3</sup>, tensor mode<sup>4</sup>, isotropy index<sup>5</sup>

---

<sup>1</sup>Zheng and Pang "2d asymmetric tensor analysis", 2005

<sup>2</sup>Laramée et al. "2d asymmetric tensor field topology", 2012

<sup>3</sup>Lin et al. "Asymmetric tensor field visualization for surfaces", 2011

<sup>4</sup>Palacios et al. "Feature surfaces in symmetric tensor fields based on eigenvalue manifold", 2015

<sup>5</sup>see footnote 12